UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/699,048	10/31/2003	Scott L. Vance	9314-55	1189

7590 01/11/2005

Robert N. Crouse
Myers Bigel Sibley & Sajovec
Post Office Box 37428
Raleigh, NC 27627

EXAMINER	
AL NAZER, LEITH A	

ART UNIT	PAPER NUMBER
2821	

DATE MAILED: 01/11/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/699,048	VANCE, SCOTT L.	
	Examiner	Art Unit	
	Leith A Al-Nazer	2821	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *31 October 2003*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-26* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-26* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Specification

1. The disclosure is objected to because of the following informalities:

The specification fails to address reference numbers 505 and 535, which are found in figure 5.

Appropriate correction is required.

Claim Objections

2. Claim 24 and 25 objected to because of the following informalities:

Claims 24 and 25 contain the exact same subject matter as claims 16 and 17, respectively. Claims 24 and 25 should be amended or cancelled.

Appropriate correction is required.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claims 7, 8, 20, and 21 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 7 and 20 recite "the second planar inverted-F antenna branch extends in first and second directions and the floating parasitic element extends in the first and

second directions." The general wording of the claim is vague, and as a result, Examiner is unsure of what structure Applicant is attempting to claim in claims 7 and 20.

Claims 8 and 21 recite a "first frequency band" and a "first frequency range". However, the claims fail to particularly point out the distinction between the two phrases. As a result, Examiner is unsure of what functions Applicant is attempting to claim in claims 8 and 21.

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

6. Claims 1-26 are rejected under 35 U.S.C. 102(e) as being anticipated by U.S. Patent Application Publication No. 2004/0198293 to Sadler et al.

With respect to claim 1, Sadler teaches a multi-band antenna comprising a first planar inverted-F antenna branch (206, 208, and 210) configured to resonate in response to first electromagnetic radiation in a first frequency band; a second planar inverted-F antenna branch (214) configured to resonate in response to second electromagnetic radiation in a second frequency band that is less than the first frequency band (paragraph 0016); a ground plane (paragraph 0007) beneath the first

and second planar inverted-F antenna branches and ohmically isolated therefrom; and a floating parasitic element (paragraphs 0006 and 0022) ohmically isolated from the second planar inverted-F antenna branch and the ground plane and configured to electromagnetically couple to the second planar inverted-F antenna branch.

With respect to claims 2, 16, and 24, Sadler teaches the floating parasitic element (402 in figure 4) being coplanar with the second planar inverted-F antenna branch (figure 4; paragraph 0022).

With respect to claims 3, 17, and 25, Sadler teaches the floating parasitic element being beneath and at least partially overlapping the second planar inverted-F antenna branch (paragraph 0006).

With respect to claim 4, Sadler teaches the floating parasitic element being between the ground plane and the second planar inverted-F antenna branch (paragraph 0006).

With respect to claims 5 and 18, Sadler teaches the first and second planar inverted-F antenna branches extending in a first direction to partially enclose an open region (figure 2A).

With respect to claims 6 and 19, Sadler teaches the second planar inverted-F antenna branch being between the floating parasitic element (402) and the open region (figure 4).

With respect to claims 7 and 20, Sadler teaches the second planar inverted-F antenna branch extending in first and second directions and the floating parasitic element extending in the first and second directions (figure 4; paragraph 0006).

With respect to claims 8 and 21, Sadler teaches the first planar inverted-F antenna branch being configured to provide a first signal component in a first frequency range of the first frequency band; and wherein the floating parasitic element is configured to resonate to provide a second signal component in the first frequency band in a second frequency range in the first frequency band that overlaps the first frequency range to provide a Voltage Standing Wave Ratio for the multi-band antenna assembly in the first frequency band of about 2.5:1 (paragraphs 0016 and 0022).

With respect to claim 9, Sadler teaches a dielectric substrate having the first and second planar inverted-F antenna branches mounted thereon, the first and second planar inverted-F antenna branches coupled to one another at a proximal portion of the dielectric substrate (figure 4; paragraphs 0007 and 0022).

With respect to claim 10, Sadler teaches an RF feed coupled to the first and second planar inverted-F antenna branches at the proximal portion of the dielectric substrate; and a ground contact spaced apart from the RF feed (figure 2B; paragraph 0020).

With respect to claims 11 and 22, Sadler teaches the first frequency band including frequencies in a range between about 1710 MHz and about 1990 MHz (paragraph 0016).

With respect to claims 12 and 23, Sadler teaches the second frequency band including frequencies in a range between about 824 MHz and about 960 MHz (paragraph 0016).

With respect to claim 13, Sadler teaches the multi-band antenna being located in a cavity of a housing of a wireless terminal (paragraphs 0001 and 0007).

With respect to claim 14, Sadler teaches the multi-band antenna being configured to couple to an exterior of a housing of a wireless terminal (paragraphs 0001 and 0007).

With respect to claim 15, Sadler teaches a multi-band wireless terminal comprising a housing that defines a cavity inside the housing (paragraph 0007); a transceiver (paragraph 0007), positioned within the cavity, that receives multi-band wireless communications signals and that transmits multi-band wireless communications signals; and a multi-band antenna in the cavity comprising a first planar inverted-F antenna branch (206, 208, and 210) configured to resonate in response to first electromagnetic radiation in a first frequency band; a second planar inverted-F antenna branch (214) configured to resonate in response to second electromagnetic radiation in a second frequency band that is less than the first frequency band; and a ground plane (paragraph 0007) beneath the first and second planar inverted-F antenna branches and ohmically isolated therefrom; and a floating parasitic element (402 in figure 4; paragraph 0022) ohmically isolated from the second planar inverted-F antenna branch and the ground plane and configured to electromagnetically couple to the second planar inverted-F antenna branch.

With respect to claim 26, Sadler teaches the floating parasitic element being above and at least partially overlapping the second planar inverted-F antenna branch (paragraph 0006).

Citation of Pertinent References

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The following patents and patent application publications further show the state of the art with respect to multi-band antennas:

a. U.S. Patent Application Publication No. 2004/0178958 to Kadambi et al.

b. U.S. Patent Application Publication No. 2001/0050643 to Egorov et al.

c. U.S. Patent No. 6,795,028 to Stutzman et al.

d. U.S. Patent No. 6,759,989 to Tarvas et al.

e. U.S. Patent No. 6,639,560 to Kadambi et al.

f. U.S. Patent No. 6,573,869 to Moore

g. U.S. Patent No. 6,166,694 to Ying

h. U.S. Patent Application Publication No. 2004/0212545 to Li et al.

i. U.S. Patent No. 6,831,607 to Hebron et al.

Communication Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Leith A Al-Nazer whose telephone number is 571-272-1938. The examiner can normally be reached on Monday-Friday, 7:30-4:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Don Wong can be reached on 571-272-1834. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

LA

WILSON LEE
PRIMARY EXAMINER